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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Y. IKEMATSU et al.
Serial No. : 10/552,668
Filed : October 5, 2005
For : HIGH STRENGTH MOLTEN ZINC PLATED STEEL
SHEET AND PROCESS OF PRODUCTION OF SAME
Examiner : Zimmerman, John J.
Art Unit : 1794
Confirmation No. : 7228

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. §1.132

I, Kazuhiko Honda, hereby declare and state as follows:

1. I am a co-inventor, along with Y. Ikematsu, K. Tanaka, S. Hayashi, H. Sawada, A. Takahashi, M. Suehiro, and Y. Takada of the above-identified patent application, which has been assigned to Nippon Steel Corporation ("Nippon"). Since 1991, I have been employed by Nippon Steel Corporation, in Tokyo, Japan at the Kimitsu R& D Laboratories, engaged in R & D of thin steel sheet material. I graduated in Welding Engineering from Osaka University in 1991.

2. I have reviewed the Final Office Action mailed May 20, 2009, and the references cited therein, *i.e.*, Japan No. 2001-323355 ("JP '355"), U.S. Patent No. 6,398,884 ("US '884"), and Japan No. 2000-290730 ("JP '730"). I have also reviewed pending claim 1.

3. I understand that the Examiner is of the opinion that JP '355 discloses a high strength galvanized steel having excellent corrosion resistance and platability wherein the

example compositions of the steel fall within the steel composition ranges required by Applicants' claim 1.

4. I carried out an experiment (Experiment 3) to determine the properties of the steel sheet of JP '355. According to JP '355, Fe oxides are formed in the oxidizing zone in a continuous zinc plating line (*see* JP '355, paragraphs [0035] and [0036]), the Fe oxides are then reduced in the reducing zone to form a SiO₂ internal layer on the steel sheet surface (*see* JP '355, paragraphs [0020] and [0037]). Data from my experiment are presented in the attached **Figures C-E**. These figures show that surface flaw defects were caused by indenting from the accumulated oxide particles on the surface of a hearth roll in a galvanized state. For example, **Figure C** shows surface flaw defects caused by a hearth roll. **Figure D** shows an enlargement of surface flaw defects caused by a hearth roll. **Figure E** shows a cross-sectional view of a plating layer which exists at the convex portion of a steel sheet before plating with surface flaw defects. In this experiment, skin-pass rolling is carried out after plating. Crack is observed at the plating layer in the convex portion of the steel. It is assumed that the crack is generated by uneven deformation stress during skin-pass rolling. The crack causes a deterioration of corrosion resistance. In JP '355, the oxide particles generated in the heating zone stuck and accumulated on the surface of the hearth roll, indenting the surface of the steel sheet and causing surface flaw defects. Therefore, the results of my experiment shows that oxide particles form on the steel sheet surface of JP '355 and that such oxide particles cause surface flaw defects.

5. Based on the above experiment, it is my opinion that one of ordinary skill in the art following the disclosure of JP '355 would not have obtained the claimed high strength molten zinc plated steel sheet of the present invention. In particular, the process of JP '355 produces a steel sheet that contains surface flaw defects. The zinc plated steel sheet of the present invention is free from plating gaps or other plating defects, including surface flaw defects such as those contained in the steel sheet of JP '355.

* * *

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title

18 of the United States Code, and that such willful false statements may jeopardize the validity of the patent or any reexamination certificate issued.

Respectfully submitted,

Kazuhiko Honda
Kazuhiko Honda

October 26, 2009
Date

Fig. C

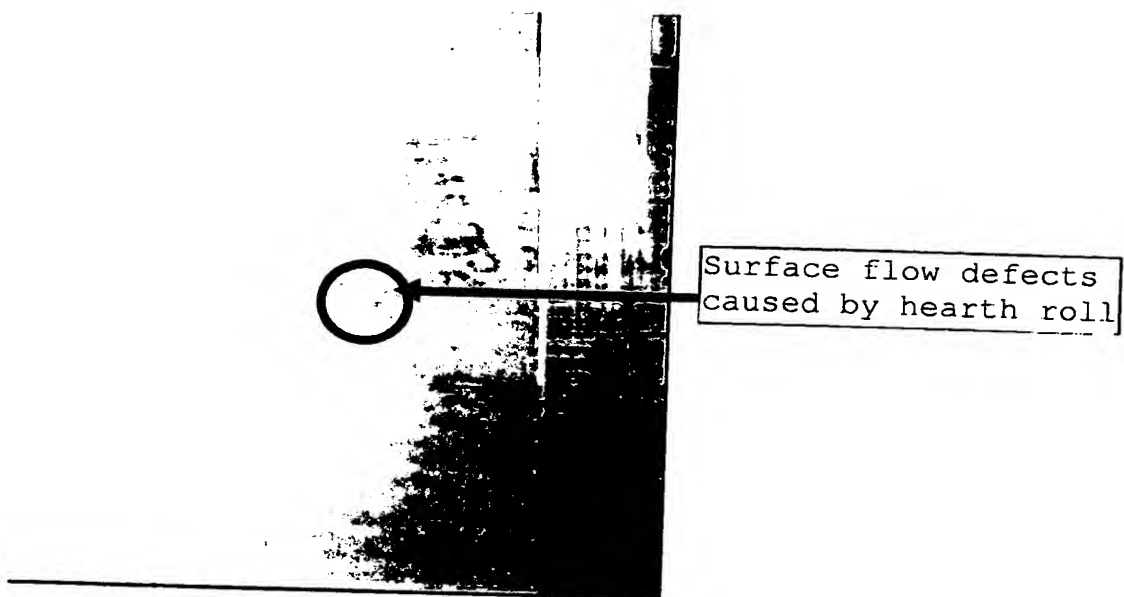


Fig. D

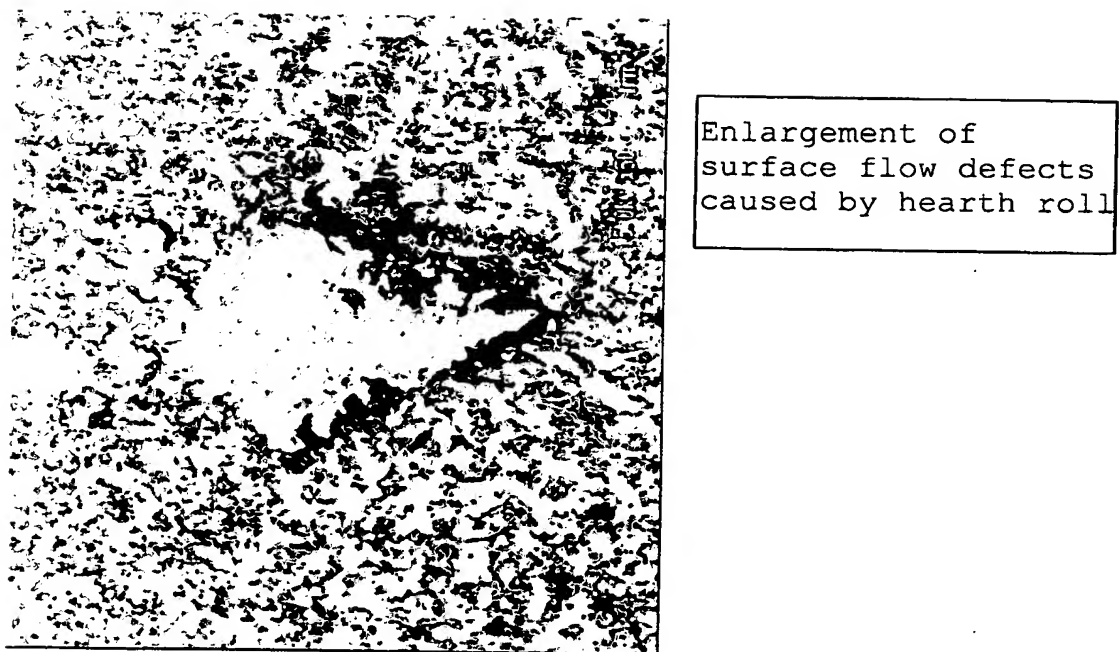


Fig. E

